The Relationship between Mississippi Accreditation Ranking and Socio-Economic Status of Student Populations in Accredited Schools

Dr. Ed Leonard and Jennifer A. L. Box

September 2009

ABSTRACT

Socio-economic status (SES) of students has long been viewed as having a strong impact on student achievement. While the nature and strength of the relationship between SES and student achievement may be open to some debate, the almost universal acceptance of SES as an important variable in student achievement outcomes has implications for funding policy and programmatically. A study of the relationship between SES and student achievement as reflected in state accreditation rankings of schools in Mississippi attempted to determine whether SES is related to student achievement measures in Mississippi. Results show that SES is significantly related to aggregate student achievement. Schools with higher numbers of low SES students were more likely to receive lower accreditation ranking while schools with lower numbers of low SES students were more likely to receive higher accreditation rankings. Given the strength of the relationship shown, it seems clear that emphasis should be given to increasing the funding available through the state funding mechanism in Mississippi that addresses SES. Programmatically, these and other available funds should be directed to programs shown to remediate academic deficits related to SES.

The Relationship between Mississippi Accreditation Ranking and Socio-Economic Status of Student Populations in Ranked Schools

INTRODUCTION

Socio-economic status (SES) has long been viewed as a prime indicator/predictor of student/school success. Schulz states that, *sic* "socio-economic status of families has been consistently found to be an important variable in explaining variance in student achievement." (Schulz 2005). Most educators accept as foundational that SES impacts student achievement, ergo the emphasis of early and continuing intervention programs for students who are underachieving. The assumption seems to be that many of these students are underachieving based on SES factors. White, however, based on an analysis of 101 studies completed between 1918 and 1975 stated that *sic* "SES is positively but only weakly correlated with measures of student achievement" (White 1982). In a replication of White's meta-analysis including 59 studies completed between 1990 and 2000 Sirin concluded that *sic* "results showed a medium to strong SES-achievement relation" (Sirin 2005). Both White and Sirin address the issues of defining SES (defined traditionally as a combination of parental income, parental education, and parental occupation) and of concomitant variables that appear to strongly affect the correlations derived between SES and various student achievement measures such as aggregated measures (as opposed to individual measures - - measures applied to schools as opposed to individual students), student characteristics (such as grade level, minority status, and school location) (Sirin 2005). The strength of the relationship between SES and student achievement may be open to some debate but it is almost always considered as a factor in examinations of variables that impact student academic performance. Nyhan, on the other hand, stated that SES is, *sic* "exogenous, i.e., outside the control of school districts" (Nyhan 1999). The implication being

that schools have little impact on this issue and therefore should not be concerned with the SES status of students beyond recognition that SES does have an impact and in light of that impact schools with high numbers of low SES students should focus instructional efforts on instructional strategies designed to ameliorate any deficiencies arising from a student's socio-economic status. SES then becomes a critical factor in determining programmatic strategies to employ in addressing student academic performance and resulting school academic success. In states such as Mississippi with high numbers of low socio-economic students, determining the relationship between socio-economic status and student performance can serve as a guide in determining funding design and in designing/selecting/implementing programs with the greatest potential for success.

Mississippi State Funding Formula – Mississippi Adequate Education Program (MAEP)

Mississippi's state funding formula is the Mississippi Adequate Education Program (MAEP). The basic formula for calculation of the state contribution takes into account, among other factors, a five percent (5 %) allowance (based on the number of students in a district eligible for free lunch) for at-risk (low SES) students (Education 2009). Recognition of the need for additional funding for low SES students aligns well with current theory regarding this issue. As Odden, Goetz and Picus relate, there is a need based on the evidence based model of school finance to offer "a comprehensive range of "extra help" strategies for students who need additional instructional assistance and extra time to achieve to rigorous state proficiency standard" (Odden 2009). And further that, "schools with larger concentrations and numbers of at-risk students would be eligible for a greater level of resources triggered by those higher pupil

counts." (Odden 2009). The dollar figure that Odden, et.al., recommend based on a prototypical school is $865 per pupil above the base allocation per student ($9,391 per pupil). (Odden 2009). The $865 per pupil suggest by Odden, et.al., represents approximately at 9 % additional allocation per pupil. This the nearly double the percentage allocated in the Mississippi funding formula and actually represents a larger differential as the current base allocation in Mississippi is $4,675, five percent of which is approximately $234 per pupil compared to the $865 recommended by Odden, et. al.

Socio Economic Status of Mississippi and Mississippi Schools

According to the United States Census Bureau, Mississippi ranks first in the nation with a poverty rate (low SES rate) of 22.6 % (Bureau 2007). While not completely analogous, this status is reflected in the percentages of students eligible for free lunch in Mississippi schools. The free lunch eligibility for the school year 2004-2005 though 2006-2007 is shown in Table 1. As the figures show, free lunch eligibility in Mississippi schools as a measure of SES exceeds the poverty level indicated by the Census Bureau. This anomaly may be due to the demographic shift that has occurred in Mississippi public schools in the past four decades as more students from higher socio-economic classes opt out of public schools or simply the fact that on a per capita basis Mississippi is the lowest in the nation at $28,845 (Bureau, PERSONAL INCOME PER CAPITA IN CURRENT DOLLARS 2007) or a combination of these factors or maybe due to the differential income levels designated for determining poverty level or free lunch eligibility. Nonetheless, it is clear that the number of low SES (as defined by free lunch eligibility) is large as a percentage of the total student population.

Table 1

State Average Free Lunch Eligibility Percentages of Mississippi Schools 2004-2005 - 2006- 2007				
Fiscal Year	**School Year**	**State Total Enrollment**	**State Number Eligible for Free Lunch**	**State Percentage Eligible for Free Lunch**
*FY 05	2004 – 2005	463,816	262,854	57.75 %
**FY 06	2005 – 2006	494,038	288,964	61.3 %
***FY 07	2006 – 2007	494,135	263,953	57.6 %

* (Bounds, Superintendent's Annual Report to the Legislature 2004-2005)
** (Bounds, Superintendent's Annual Report to the Legislature 2005-2006)
*** (Bounds, Superintendent's Annual Report to the Legislature 2006-2007)

Mississippi Accreditation Ranking and SES

Each school in Mississippi that includes at least one grade level that is subject to inclusion in the state testing program is assigned a numerical ranking (Accreditation Level). The rankings are based on a scale of 1 – 5. Level one is the lowest accreditation ranking and Level 5 is the highest accreditation ranking (Bounds, Mississippi Public School Accountability Standards 2008). Each category is assigned a descriptor as well. The descriptors are: Level 1, Low-Performing; Level 2, Under-Performing; Level 3, Successful; Level 4, Exemplary; and, Level 5, Superior Performing. Scores on the Mississippi Curriculum Test (MCT) and the Mississippi Subject Area Testing Program (SATP) are aligned with federal No Child Left Behind (NCLB) standards. Scores on the MCT and SATP determine the level assigned to each school. Table 2 shows the number of schools assigned to each level for school years 2004 – 2005 through 2006 – 2007 (the last year for which rankings are available). Rankings have been frozen as Mississippi transitions from the current testing program (MCT and SATP) to a new, more rigorous testing

program MCT2 and SATP2 and to a new ranking system based on an expanded descriptive scale.

Table 2

Mississippi Schools by Accreditation Level **2004-2004 – 2006-2007**			
Accreditation Level	**04-05***	**05-06****	**06-07****
Level 1 Low-Performing	8	3	11
Level 2 Under-Performing	73	70	96
Level 3 Successful	319	293	313
Level 4 Exemplary	214	212	215
Level 5 Superior Performing	224	211	257
Total	838	789	892

* (Bounds, Superintendent's Annual Report to the Legislature 2004-2005)
** (Bounds, Superintendent's Annual Report to the Legislature 2005-2006)
*** (Bounds, Superintendent's Annual Report to the Legislature 2006-2007)

Table 4 shows the distribution of schools by number and cumulative percentage of students eligible for free lunch for the school years 2004-2005 though 2006-2007. Of the 836 schools reported for the 2004 – 2005 school year 600 had 50% of the students eligible for free lunch. For the same year 754 of the 836 schools had 60 % or of the students eligible for free lunch. Of the 836 schools reported for the 2005 – 2006 school year 593 had 50% of the students eligible for free lunch. For the same year 703 of the 836 schools had 60 % or of the students

eligible for free lunch. Of the 844 schools reported for the 2006 – 2007 school year 551 had 50% of the students eligible for free lunch. For the same year 688 of the 844 schools had 60 % or of the students eligible for free lunch. The number of schools with 50 % to 60 % of the students eligible for free lunch reinforces the conception that Mississippi schools are populated by high numbers of low SES students. (Note: The number of schools reported in Table 2 and the number of schools reported in Table 3 differ due to the fact that some schools in Mississippi do not receive an accreditation rating based on grade configuration. For example, a school with grades K-2 would not be assigned an accreditation ranking since none of the students were tested within the state testing program.)

Table 3

Mississippi Schools by Number and Cumulative Percentage of Students Eligible for Free Lunch 2004-2004 – 2006-2007			
Percentage Range	**04-05*** **# / Cum %**	**05-06**** **# / Cum %**	**06-07**** **# / Cum %**
90-100 %	175 / 20.93%	175 / 20.93%	153 / 18.13%
80–89 %	133 / 36.84%	134 / 36.96%	118 / 32.11%
70-79 %	98 / 48.56%	96 / 48.44%	94 / 43.25%
60-69 %	98 / 60.29%	98 / 60.17%	83 / 53.08%
50-59 %	96 / 71.77%	96 / 71.65%	103 / 65.28%
40-49 %	104 / 84.21%	104 / 84.09%	137 / 81.52%
30-39 %	72 / 92.82%	73 / 92.82%	82 / 91.23%
20-29 %	32 / 96.65%	31 / 96.53%	46 / 96.68%
10-19 %	15 / 98.44%	16 / 98.44%	23 / 99.41%
0-9 %	13 / 100.00%	13 / 100.00%	5 / 100.00%
Total	836	836	844

* (Bounds, Superintendent's Annual Report to the Legislature 2004-2005)
** (Bounds, Superintendent's Annual Report to the Legislature 2005-2006)
*** (Bounds, Superintendent's Annual Report to the Legislature 2006-2007)

ANALYSIS OF CORRELATIONS BETWEEN SES ANDS ACCREDITATION RANKING

Using the state accreditation ranking assigned to each school by school year and the corresponding percentage of students eligible for free lunch for that school correlations were calculated between the accreditation ranking and the free lunch percentage. Table 4 lists those correlations. Each of the correlations is negative, indicating an inverse relationship between SES

and accreditation ranking. That is, as SES increases (the larger the percentage of students eligible for free lunch) the state accreditation ranking of the school decreases and conversely as SES decreases (the smaller the percentage of students eligible for free lunch) the state accreditation ranking of the school increases. Each correlation is statistically significant at the .01 level two tailed.

Table 4

Correlation between Accreditation Status and SES Status by School Based on Free Lunch Eligibility 2004-2005 - 2006-2007			
Fiscal Year	**School Year**	**Correlation**	
FY 05	2004 – 2005	Correlation -0.515	Significance Level ..000 01 (2-tailed)
FY 06	2005 – 2006	Correlation -0.501	Significance Level .000 .01 (2-tailed)
FY 07	2006 - 2007	Correlation -0.623	Significance Level .000 .01 (2-tailed)

CONCLUSIONS

The portent of these correlations is manifold. A fundamental consideration is the equity of the funding provided. Schulz stated that, *sic* "it is important to provide information about the effects of SES on performance and many results have helped to highlight differences in equity in education and describe the way SES interacts with the characteristics of educational systems." (Schulz 2005). Similarly, in earlier discussion of the same topic Renchler related that, "the statistics on children who live in poverty portray a picture of a nation struggling to keep up with the problem and perhaps not fully committed to solving it" (Renchler 1993). Renchler goes on to state that, " low-SES students often find themselves at another disadvantage not of their own

making: they generally are clustered in schools that are grossly underfunded, while other nearby schools attended primarily by higher SES students receive substantially more funding on a per-pupil basis" (Renchler 1993) While Mississippi has in place a funding program that is designed to create a reasonable level of balance in funding, disparities still exist. Under the Mississippi funding formula each district is provided sufficient funds, theoretically, to achieve Level 3 (successful status). Still the correlations presented indicate clearly that SES is related to the academic outcomes and that there are a large number of schools/students in the low SES low performing category.

The funding issue is related to the program issues. Programmatically is the portent of the correlations that programs need to be in place that consistently addresses the potential for underachievement of these students. Program design, implementation and evaluation are long term undertakings that require investment. This funding investment is best provided by state programs that tend to provide for equity in distribution but must be sufficient to allow the needed programs to put in place. While schools may not, at least in the short term, impact SES they can recognize the impact of low SES and provide programs which address current SES related issues and help to establish a greater level of equity both financially and programmatically.

REFERENCES

Bounds, Hank. "Mississippi Public School Accountability Standards 2008." *Mississippi State Deparment of Education.* 2008. www.mde.k12.ms.us (accessed 2008).

—. "Superintendent's Annual Report to the Legislature 2004-2005." *Mississippi State Deaprtment of Education.* 2004-2005. www.mde.k12.ms.us (accessed 2008).

—. "Superintendent's Annual Report to the Legislature 2005-2006." *Mississippi State Department of Education.* 2005-2006. www.mde.k12.ms.us (accessed 2008).

—. "Superintendent's Annual Report to the Legislature 2006-2007." *Mississippi State Department of Education.* 2006-2007. www.mde.k12.ms.us (accessed 2008).

Bureau, U. S. Census. *Current Population Survey.* 2007. http://pubdb3.census.gov/macro/032008/pov/new46_000.htm (accessed February 4, 2008).

—. *PERSONAL INCOME PER CAPITA IN CURRENT DOLLARS.* 2007. http://www.census.gov/compendia/statab/ranks/rank29.html (accessed 2 4, 2008).

Education, Mississippi State Department of. "Mississippi Adequate Education Program (MAEP) Explanation." *Mississippi State Deaprtment of Education.* 2009. http://www.mde.k12.ms.us/financial_accountability/maep.html (accessed 2009).

Nyhan, Ronald C., Alkadry, Mohamad G. "The Impact of School Resources on Studnet Achievement test Scores." *Journal of Education Finance*, 1999: 211-217.

Odden, Allan R., Goetz, Michael e., and Picus, Lawrence O. "Paying for School finance with the National Average Expenditure Per Pupil." *School Finance Redesign Project.* 2009. www.schoolfinancerediseignt.org (accessed February 28, 2009).

Renchler, Ron. "Poverty and Learning." *ERIC.* May 1993. http://eric.ed.gov/ERICWebPortal/Home.portal?_nfpb=true&ERICExtSearch_Operator_2=and&ERICExtSearch_SearchType_0=ti&ERICExtSearch_SearchValue_2=&ERICExtSearch_SearchValue_1=Renchler%2C+Ron&ERICExtSearch_Operator_1=and&ERICExtSearch_SearchType_1=au&ERICExtS (accessed February 17, 2009).

Sirin, Selcuk R. "Socioeconomic Status and Academic Achievement: A Meta-Analytic Review of Research." *Review of Educational Research*, 2005: 417-453.

Verstegen, Deborah A., and Richard A. King. "The Relationship Between School Spending and Student Achievement: A Review and Analysis of 35 Years of Production Function Research." *Journal of Education Finance*, 1998: 243-62.

White, Karl R. "The Relation Between Socioeconomic Status and Academic Achievement." *Psychological Bulletin*, 1982: 461-481.